

WHAT IS CLAIMED IS:

1 1. A multispectral focal plane array comprising:  
2 a linear array of photodetectors, each photodetector in the  
3 linear array having a distinct spectral response; and  
4 an integrated circuit coupled to a read out of the linear  
5 array, wherein the integrated circuit collects electrical  
6 signals from the individual photodetectors.

1

1 2. A multispectral focal plane array comprising:  
2 a two-dimensional array of photodetectors having groups of  
3 photodetectors, each group having a distinct spectral response;  
4 and  
5 an integrated circuit coupled to a read out of the two-  
6 dimensional array, wherein the integrated circuit collects  
7 electrical signals from the photodetectors.

1

1 3. The multispectral focal plane array of claim 1 wherein the  
2 photodetectors are, either photodiodes or photoconductors.

1

1 4. The multispectral focal plane array of claim 2 wherein the  
2 photodetectors are, either photodiodes or photoconductors.

1

1

1 5. The multispectral focal plane array of claim 1 wherein the  
2 photodetectors are fabricated from epilayers of ternary or  
3 quaternary compound semiconducting materials whose band-gap  
4 varies via a grading of the chemical composition of the  
5 photodetector.

1

1 6. The multispectral focal plane array of claim 2 wherein the  
2 photodetectors are fabricated from ternary or quaternary  
3 compound semiconducting materials whose band-gap varies through  
4 a grading of the chemical composition of the photodetector.

1

1 7. The multispectral focal plane array of claim 1 wherein the  
2 photodetectors vary in height and are fabricated from epilayers  
3 of compositionally graded compound semiconducting material such  
4 that the height of the photodetector determines the distinct  
5 spectral response of photodetector.

1

1 8. The multispectral focal plane array of claim 2 wherein the  
2 photodetectors vary in height and are fabricated from epilayers  
3 of compositionally graded compound semiconducting material such  
4 that the height of the photodetector determines the distinct  
5 spectral response of photodetector.

1

1 9. The multispectral focal plane array of claim 7 wherein any  
2 photodetector of a given height is a broadband detector which  
3 detects more long-wavelength photons than those photodetectors  
4 which are shorter and fewer long-wavelength photons than those  
5 photodetectors which are taller.

1

1 10. The multispectral focal plane array of Claim 8 wherein any  
2 group of photodetectors of a given height are broadband  
3 detectors which detect more long-wavelength photons than those  
4 groups of photodetectors which are shorter and fewer long-  
5 wavelength photons than those groups of photodetectors which are  
6 taller.

1

1 11. The multispectral focal plane array of Claim 1 wherein the  
2 photodetector array is formed of rows of photodetectors each of  
3 a distinct height, fabricated from a continuously graded  
4 epilayer of compound semiconductor, wherein each row of the two-  
5 dimensional array corresponds to a distinct spectral response.

1

1 12. The multispectral focal plane array of Claim 2 wherein the  
2 photodetector array is formed of groups of rows of  
3 photodetectors, wherein each group is a distinct height,  
4 fabricated from a step-wise graded epilayer of compound

5 semiconductor, wherein each group of rows of the two-dimensional  
6 array corresponds to a distinct spectral response.

1

1 13. The multispectral focal plane array of claim 1 wherein the  
2 photodetector array is a continuously graded epilayer formed of  
3 rows of pixels, wherein each row of the two-dimensional array  
4 corresponds to a distinct spectral response.

1

1 14. The multispectral focal plane array of claim 2 wherein the  
2 photodetector array is a continuously graded epilayer formed of  
3 rows of pixels, wherein each row of the two-dimensional array  
4 corresponds to a distinct spectral response.

1

1 15. The multispectral photodetector array of claim 11 wherein  
2 the ternary or quaternary compound semiconducting material  
3 system is formed of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ , wherein the band gap of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$   
4 varies with chemical composition (x value).

1

1 16. The multispectral photodetector array of claim 12 wherein  
2 the ternary or quaternary compound semiconducting material  
3 system is formed of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ , wherein the band gap of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$   
4 varies with chemical composition (x value).